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ABSTRACT

Adolescent health is influenced not only by the strengths and vulnerabilities of individual adolescents, but also by the character of the settings in which they lead their lives. The National Longitudinal Study of Adolescent Health (Add Health) is the first national study of adolescent health designed to measure the social settings of adolescent lives, the way in which adolescents connect their social world, and the influence of these social settings and connections on health. Summaries of the first analysis of the Add Health data are presented here. The report focuses on health and behavior, family connections, school connections, and individual characteristics, with an emphasis on those things that protect young people from harm. Specific issues covered include emotional distress, suicidal thoughts and attempts, violence perpetration, cigarette use, alcohol use, marijuana use, early sexual involvement, and pregnancy. By most measures, teenagers across the country are doing well. However, some teens are at risk, and as they get older, students report higher levels of distress than do students in grades 7 and 8. Girls report one-third more emotional distress than boys. Nevertheless, when teenagers felt connected to their families and when parents were involved in their children's lives, teens were protected from many difficulties. (RJM)

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Reducing the Risk:

Connections That Make a Difference in the Lives of Youth

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Link points at [illegible] of race, ethnicity, family structure and parent's status. adolescents who [illegible] are connected to their parents, to their families, and to their school community [illegible] are healthier than those who are not.

Reducing the Risk:

Connections That Make a Difference in the Lives of Youth

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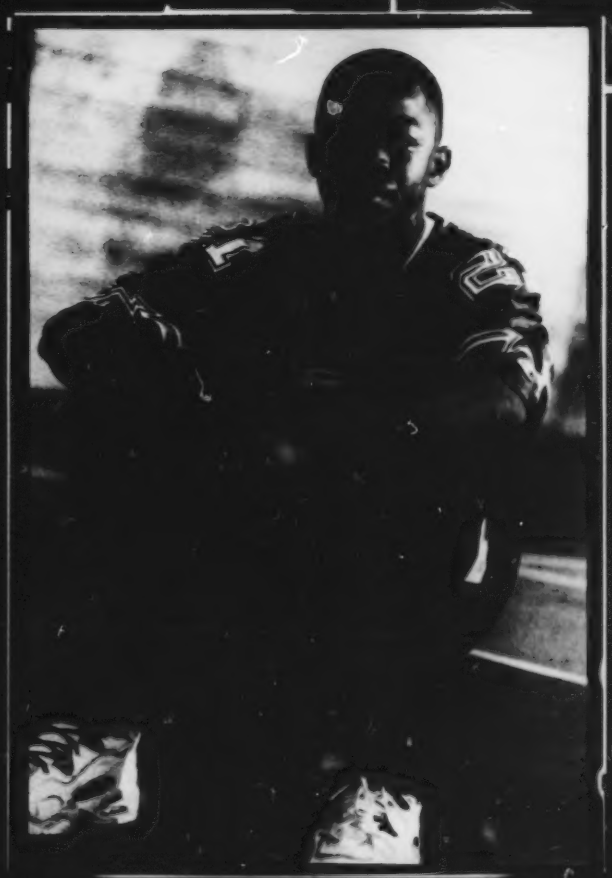

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Introduction

Adolescent health is influenced not only *by the strengths and vulnerabilities* *of individual adolescents but also by the character of the settings in which they lead their* *lives.*

These settings—the schools they attend, the neighborhoods they call home, their families, and the friends who comprise their social world—play an important but still incompletely understood role in shaping adolescent health. They do so by influencing both how adolescents feel about themselves as well as the choices they make about behaviors that can affect their health and their future lives.

The National Longitudinal Study of Adolescent Health (Add Health) is the first national study of adolescent health designed to measure the social settings of adolescent lives, the ways in which adolescents connect to their social world, and the influence of these social settings and connections on health.

Adolescence: A Healthy Time?

As a group, adolescents are physically healthy. They have survived early childhood and are decades away from the diseases associated with aging.

Threats to their health stem primarily from their behavior. Drinking and driving, involvement in violence, early and unprotected sex, and drug abuse create immediate threats; use of tobacco, poor nutrition, and sedentary lifestyles can lead to health problems in later years.

Numerous reports have documented the health status of youth in America. After more than a decade of downward trends in the health of America's youth, significant improvements were reported in the decade of 1980-1990. There were reductions in juvenile motor vehicle deaths, the use of alcohol, cigarettes and illicit substances, and the incidence of some sexually transmitted diseases (including gonorrhea and syphilis). Overall, the death rate for youth between the ages of 15 and 24 decreased by 12 percent during that time period. That's the good news.

The bad news? Since 1990, some of those risky behaviors have again increased. Teenage cigarette smoking is up by as much as 2 percent per year since 1992. Until recently, marijuana use had increased for three straight years among 8th, 10th, and 12th grade students. More teens live in

poverty now than during the previous decade. Violence, suicide, and teenage pregnancy continue to be problems for many young people. Teenage homicide has increased. Between 1979 and 1991, almost 40,000 adolescents ages 15 to 19 died as a result of firearms: 62 percent were homicides, 33 percent were suicides, and 5 percent were unintentional injuries.

During a developmental stage of great physical health, we know that many youth are facing a constellation of problems that have negative health outcomes.

CONGRESSIONAL MANDATE

The Add Health study was undertaken in response to a mandate by the US Congress in the NIH Revitalization Act of 1993 (Public Law 103-43, Title X, Subtitle D, Section 1031).

The Congress asked the National Institute of Child Health and Human Development (NICHD), a part of the National Institutes of Health, to develop a prospective longitudinal study on adolescent health. Congress asked that the study provide information about the health and well-being of adolescents in our country and about the behaviors that promote adolescent health or that put health at risk. The study was to include a focus on how communities influenced the health of adolescents.

The Add Health study was developed to provide comprehensive information about the factors which influence adolescent health and health behaviors. In response to a mandate by the US Congress, the National Institute of Child Health and Human Development (NICHD) and 17 other Federal Offices and Institutes funded the study.

This report describes the first results from the Add Health study. It shows how key aspects of the home environment, the school context, and the individual adolescent's life can protect young people from harm or place them at risk. It lays the groundwork for building a detailed understanding of *Connections That Make a Difference in the Lives of Youth.*

The Scope of the Research

The Add Health study will provide data on adolescent health of unprecedented scope and significance.

The information gathered will allow researchers to explore which individual characteristics, interpersonal, familial, and environmental factors contribute to healthy and unhealthy behavior.

In addition, researchers will be able to examine behavior and conditions that contribute to adolescent health outcomes, including such things as:

- **exercise and fitness**
- **chronic and disabling conditions**
- **substance use and abuse**
- **sexual behavior**
- **running away from home**
- **violence**

- **use of health services**
- **unintentional injury**
- **contraceptive use**
- **insurance coverage**

The Add Health study design allows researchers to test ideas about how a young person's individual characteristics (his or her attitudes, knowledge, and skills) affect health. They will also be able to use the data to learn how health is influenced by connections to family, friends, and school, and by the characteristics of the community in which the teen resides.

A Major Comprehensive Study

Add Health is a school-based study of the health-related behaviors of adolescents in the United States.

Add Health surveys were conducted in two phases. In the first phase, some 90,000 students in grades 7 through 12 attending 145 schools around the United States answered brief questionnaires about their lives, including their health, friendships, self-esteem, and expectations for the future. Before students could participate, parents had to give their permission through procedures

approved by each school.

In the second phase, with written consent of both the parent and adolescent, over 20,000 in-home interviews of students were conducted between April and December of 1995 (Wave I). No paper questionnaires were used. Instead, all data were recorded on lap-top computers. A follow-up (Wave II) of 15,000 adolescents, interviewed again at home, was conducted between April and August of 1996.

A parent, usually the mother, of each adolescent interviewed at home was asked to complete an interview as part of Wave I. Eighteen thousand parent interviews were completed.

In the first year of the study, administrators from the participating

schools completed questionnaires dealing with school policies and procedures, teacher characteristics, health service provision or referral, and student body characteristics. In the spring of 1996, school information was updated in a telephone interview.

Add Health's longitudinal design captures changes over time in adolescents' behavior and in their lives. This gives scientists the opportunity to tease out the causal relationships between characteristics of the adolescent's social context and the adolescent's behavior.

The study has collected data of interest to investigators from many disciplines in the social and behavioral sciences and from many theoretical traditions. Because of the sheer volume of data collected, a complete analysis of the survey is expected to take a decade or more. Survey findings will be reported periodically by individual teams of scientists as results become available.

First Analysis of the Data

The first analysis of Add Health data provides a foundation for understanding risk and protective factors in the lives of American youth in the middle 1990s. *Connections That Make a Difference in the Lives of Youth* explores how individual, family, and school characteristics protect teens across America from:

- **emotional distress**
- **suicidal thoughts and attempts**
- **violence perpetration**
- **cigarette use**
- **alcohol use**
- **marijuana use**
- **early sexual involvement**
- **pregnancy**

The findings in this report are based on the first (Wave I) in-home teenage interviews, and data provided by school administrators. The longitudinal data were not available for the initial analyses of Add Health data presented in this report, but will be used in future analyses.

Measuring Health and Behaviors

By most measures *teenagers across the country are doing well. Most teens, most of the time, make choices that* *protect them from harm.*

However, this first analysis also provides us with a snapshot of young people who are not doing well. It helps us to understand which teens are at greatest risk for unhealthy behavior.

Emotional Health

As teens get older, emotional distress increases. High school students report higher levels of distress than those in grades 7 and 8. Girls report one-third more emotional distress than boys.

- **teens in rural areas report slightly higher emotional distress when compared with urban and suburban peers.**

Measuring Health and Behaviors

Emotional Distress

In the past week or past year: felt depressed, lonely, sad, fearful, crying, moody, poor appetite.

Suicidality

In the past year: seriously thought about committing suicide; attempted suicide 1, 2, or more times.

Violence

In the past year: physical fight, injured someone, group fight, threatened someone with a weapon, used weapon in fight, shot or stabbed someone.

Substance Use

Cigarette use: Seven categories, from never smoked to smoke more than one pack per day.

Alcohol use: Eight category composite from never/almost never to daily/almost daily.

Marijuana use: Seven categories, from never used to used 6 or more times in the past month.

Sexual Behaviors

Age of sexual debut: Age at first intercourse.

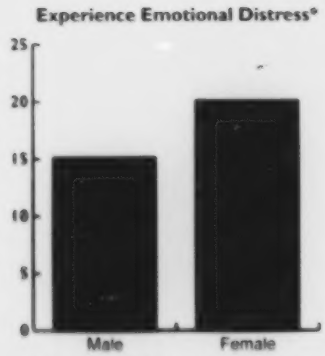
Pregnancy history: Among sexually experienced females 15 years and older.

Researchers sorted hundreds of questions to get at the essence of adolescent health-risk behaviors. Those involved in these risk behaviors were compared to those "protected" and the data were compared to answer the question, "Why?"

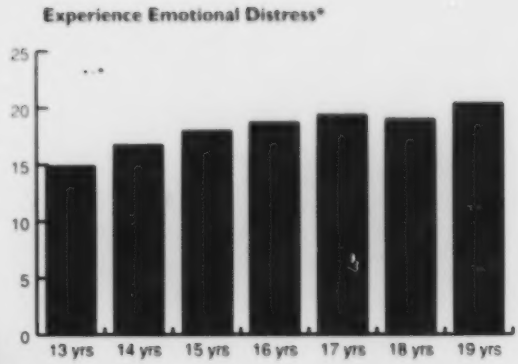
Who has the most emotional stress*?

- Older teens
- Rural youth
- Welfare recipients
- Native American youth

*Add Health data ($p < .05$)



* Scale of 1-100. Higher score means greater distress on average.



* Scale of 1-100. Higher score means greater distress on average.

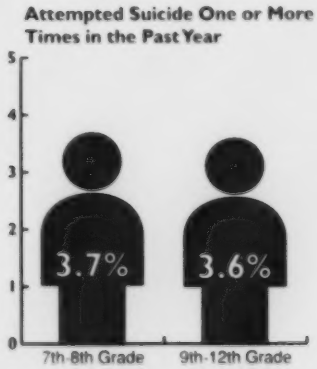
- **White teens report the lowest emotional distress followed by: African Americans, Asian/Pacific Islanders, Hispanic, and American Indians.**
- **teens on welfare report much higher emotional distress than peers.**

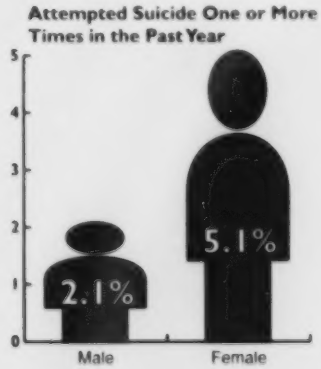
The vast majority of adolescents have not thought about suicide nor attempted it. However, 9 percent of youth report having suicidal thoughts but no attempts and just under 4 percent have attempted suicide. Girls are more than twice as likely as boys to have made a suicide attempt. Teens who live in the West and teens who report that their parents receive welfare are also more likely than other teens to have attempted suicide.

Who is at most risk for suicide attempts*?

- Hispanic and Native American teens
- Females
- Rural teens
- Teens who live in the West

*Add Health data ($p < .05$)

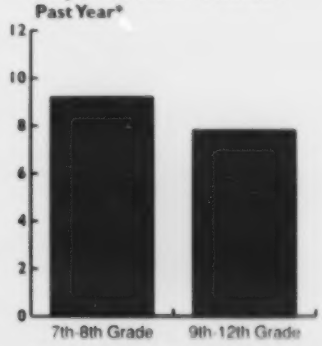




Violence

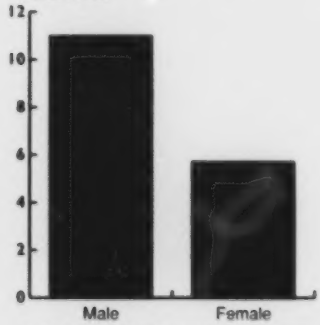
Over 10 percent of males and over 5 percent of females report having committed a violent act in the past year. More younger than older teens report having been involved in violent activities. Urban teens, teens whose families receive welfare, and Native American teens appear more likely than other teens to be involved in violence. Additionally, 12.4 percent of students say they have carried a weapon to school in the past month.

Perpetrated Violence in the Past Year*



* Scale of 1-100. Higher score means more violent behavior on average.

Perpetrated Violence in the Past Year*



* Scale of 1-100. Higher score means more violent behavior on average.

Who is at most risk for engaging in violence*?

- Welfare recipients
- Younger teens
- Urban youth
- Native American teens

*Add Health data ($p<.05$).

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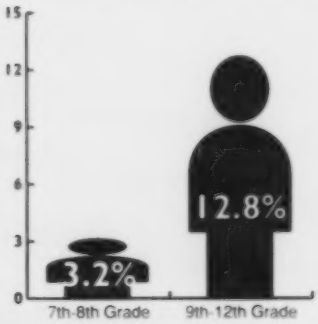
Tobacco, Alcohol, and Drugs

Just over one in four adolescents report being a current smoker. A little over 9 percent of girls and 10 percent of boys smoke six or more cigarettes a day. Youth from the Western states are less likely to smoke six or more cigarettes a day than those from other regions of the country.

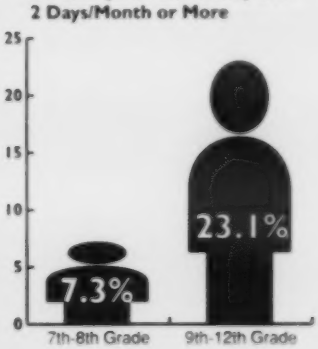
Fewer teens report drinking than smoking. Overall, 17.9 percent say they drink alcohol (including beer and wine) more than monthly, while nearly 10 percent admit to drinking at least one day a week. The highest levels of alcohol use are found among youth living in the suburbs: nearly one in five suburban teens report drinking more than once a month.

Smoke Six or More Cigarettes a Day

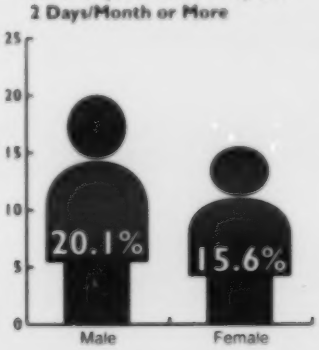


Smoke Six or More Cigarettes a Day

Alcohol (Beer and Wine) Use 2 Days/Month or More

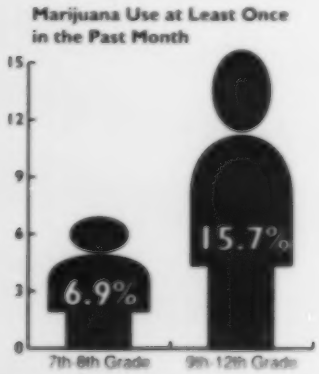


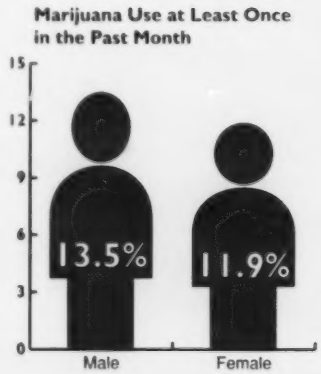
Alcohol (Beer and Wine) Use 2 Days/Month or More



One quarter of all young people (25.2 percent) report having smoked marijuana at least once in their lives; 12.7 percent say they have smoked at least once during the previous month. About 6 percent of all students indicate use four or more times in the past month. Use of marijuana in the past month appears to be least common among youth living in the South, and more common among suburban youth than either urban or rural teens.

All three kinds of substance use—smoking cigarettes, drinking alcohol, and using marijuana—are much more common among high school students than among 7th and 8th graders.





Who is at most risk for substance use*?

- Teens in the Northeast for smoking
- White teens for cigarette and alcohol use; Native American teens for heavy marijuana use
- Teens on welfare for marijuana use

*Add Health data ($p<.05$)

Sexual Involvement

Seventeen percent of 7th and 8th graders report having had sexual intercourse. Among adolescents in high school, the figure is almost three times as high (49.3 percent). Males and females in the 7th-12th grade report having had intercourse just about equally: 39.9 percent of boys, 37.3 percent of girls. Teens living in the South and in rural areas, and teens whose parents receive welfare were most likely to have experienced sexual intercourse.

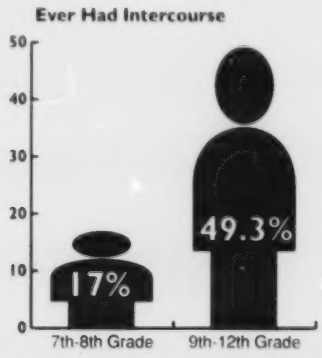
Of girls who are sexually experienced, 11.8 percent of younger teens and 19.4 percent of older teens report having been pregnant.

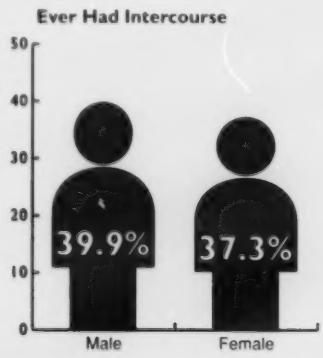
In summary, the first analysis of the Add Health data shows that while most teenagers are doing well, many young people face a constellation of problems that undermine their well-being today and will threaten their health in the future. Add Health is unique among studies of adolescent health because it includes rich measures of the influences that can protect young people from harm or, conversely, predispose them to risk. This analysis shows that families and schools can influence the health behaviors of youth. Likewise, individual characteristics also contribute to healthy outcomes.

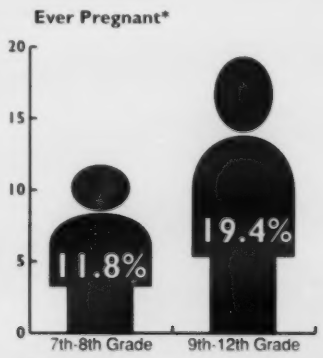
Who is at greatest risk for engaging in early intercourse*?

- Rural teens
- Youth on welfare
- African American adolescents
- Kids from the south

*Add Health data (pg. 05)

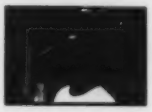






*Percent of females who are sexually experienced

Family Connections Make a Difference in the Lives of Youth

The home *environment makes a difference in the health of American youth. When teens feel connected* *to their families and*  *when parents are involved in their children's lives, teens are protected.*

Teens are also protected when they do not have access to guns, cigarettes, alcohol and drugs at home. Teens are protected by having parents who have high expectations for school performance.

Add Health measured many dimensions of the home environment. The study asked adolescents about their sense of connectedness to their parents and families: their feelings of closeness to their parents, their satisfaction with family relationships, and their sense of being loved and cared for. Teens answered questions about their participation in activities with their parents, and whether a parent was physically present in the home at key times during the day. They reported whether they had access to guns, cigarettes, alcohol, and drugs at home, and whether their parents expected them to complete high school and college.

Time and time again, the home environment emerges as central in shaping health outcomes for American youth. Controlling for the number of parents in a household, controlling for whether families are rich or poor, controlling for race and ethnicity, children who report feeling connected to a parent are protected against many different kinds of health risks including: emotional distress and suicidal thoughts and attempts; cigarette, alcohol, and marijuana use; violent behavior; and early sexual activity.

When a parent is physically present in the home at key times, and has high expectations for the child's education, children are on the road to being protected from involvement in behaviors that can damage them.

Teasing Out the Family Context
Parent and Family Connectedness
Highest degree of closeness, caring, and satisfaction with parental relationship, whether resident or non-resident mother or father; feeling understood, loved, wanted, and paid attention to by family members.
Parental/Adolescent Activities
Number of different activities engaged in with resident and/or non-resident parent or parents in the past four weeks.
Parental Presence
Parent present: Before school, after school, dinner, bedtime.
Household Access to Guns
Do or do not have easy access to guns at home.
Household Access to Substances
Do or do not have easy access to cigarettes, alcohol, illegal drugs at home.
Family Suicide or Attempts
Suicidal attempts and/or completions by any family member in the past 12 months.
Parent Disapproval of Sex
Parent disapproval of adolescent having intercourse now.
Parent Disapproval of Contraception
Parent disapproval of adolescent using contraception now.
Parental School Expectations
Mother's or father's expectations for high school and college completion.

Relationships with both resident and non-resident parents were analyzed. For two-parent families, highest parental expectation was used.

When teenagers have easy access to cigarettes, alcohol, marijuana, or guns at home, parents are increasing the chances that their children will be involved in damaging behaviors.

Protecting Teens from Emotional Distress

Family connectedness contributes to the mental health of American youth. When teenagers feel connected to their families, they are less likely to experience emotional distress.

Though not to the same extent, adolescents are also protected from emotional distress by:

- **their parents being present at key times during the day (in the morning, after school, at dinner, and at bedtime);**
- **their parents' high expectations for school performance.**

Feeling connected to parents and family significantly protects both younger and older adolescents from thinking about or attempting suicide. However, having a gun that is easily available at home is associated with increased suicide risk among older adolescents. Overall, 24.2 percent of all adolescents said that guns were easily accessible at home.

Family Characteristics that Influence the Emotional Health of Teens

	Emotional Distress		Suicide Thoughts or Attemps**	
	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12
Family				
Parent/family connectedness	■	■	■	■
Parental/adolescent activities	■			
Parental presence	■	■		
Parental school expectations	■	■		
Recent family suicide attempts/completions	■	■	■	■
Household access to guns*				■

*This is a yes/no question. Risk is estimated by comparing "yes" answers with all others.
**In the past year.

not statistically important | protective factor | risk factor

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Family Characteristics that Influence Youth Participation in Violence

	Violence	
	Grades 7-8	Grades 9-12
Family Parent/family connectedness		
Parental Presence		
Recent family suicide attempts/completions		
Household access to guns*		

*This is a yes/no question.

not statistically important | protective factor | risk factor

Diminishing Youth Violence

Adolescents living in homes where there is easy access to guns are more likely to be involved in violent behavior. While family connectedness is associated with lower levels of interpersonal violence, the association is not very strong. Higher parental expectations for school achievement

are only weakly associated with lower levels of violence and then only for older teens.

Protecting Against Substance Abuse

The Add Health data also show that the mere presence of drugs, alcohol, or tobacco in the home increases the likelihood of adolescents using these substances.

Families can protect their adolescents from the use of substances by making cigarettes, alcohol or marijuana less accessible. Like guns, when cigarettes, alcohol, or marijuana are out of the reach of adolescents,

Family Characteristics that Influence Adolescent Substance Abuse

	Cigarette Use		Alcohol Use		Marijuana Use	
	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12
Family						
Parent/family connectedness	■	■	■	■	■	■
Parental/adolescent activities		■				
Parental presence		■		■	■	■
Parental school expectations		■				
Recent family suicide attempts/completions	■	■		■		
Household access to substances*	■	■	■	■	■	■

*This is a yes/no question.

not statistically important | protective factor | risk factor

teens are less likely to use them. And if they do use any of these substances, they will do so less frequently than those who have access to them at home.

In addition, Add Health shows that when teens feel very connected to parents and family members, they report less frequent use of cigarettes, alcohol, and marijuana. This holds true for both older and younger teens.

When parents are more frequently present in the home at key times of the day, older youth (grades 9-12) are less likely to smoke cigarettes or drink alcohol, and both older and younger adolescents are less likely to smoke marijuana. There does not seem to be a magical time of the day (e.g., after school) when parental presence is especially critical. Rather, it is having access to a parent and perhaps parental supervision in general that matters most.

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Family Characteristics that Protect Teens From Early Sexual Intercourse and Pregnancy

	Age of Sexual Debut	Pregnancy History
	All Grades	Sexually Experienced Females ≥ 15 Years
Family		
Parent/family connectedness	■	
Recent family suicide attempts/completions	■	
Perceived parent disapproval of adolescent sex	■	
Perceived parent disapproval of adolescent contraception	■	■
Parent/adolescent activities		■

not statistically important ■ ■

Delaying Sexual Involvement and Reducing Pregnancy

Parents and families also influence the choices that adolescent children make about their own sexual behavior.

Parents and families whose adolescent children feel connected to them and those who are perceived by the adolescent as disapproving of their teens being sexually active provide some protection from early sexual intercourse. Disapproval of adolescent contraception protects teens from early sexual involvement as well as from pregnancy. Likewise, a greater number of shared activities with parents protects against pregnancy. In other words, parents who give clear messages about delaying sex have children who are less likely to have early intercourse.

For each aspect of health that Add Health researchers examined, the home environment proved important. Teens' sense of connectedness to parents and family, parental presence in the home, shared activities, parents' expectations for their teens, and the presence of guns, cigarettes, alcohol, and drugs in the home all are associated, either positively or negatively, with one or more facets of adolescent health and behavior.

School Connections Make a Difference in the Lives of Youth

American adolescents *stand a better chance of avoiding risky behavior when they experience and express strong* *connections to their school.*

Add Health researchers measured many aspects of the school environment. Is it a public or private school? Are the classes large or small? What proportion of the students go on to college? How many of the teachers have advanced training? What proportion of parents participate in a parent-teacher organization? What are the school's drop-out rates and rates of absenteeism? What policies does the school have governing violence, cigarette use, or drugs?

Students' feelings of connectedness to school were measured by a series of questions that asked whether students feel that their teachers treat them fairly, feel close to people at school, and feel a part of the school. Students were also asked if they think students attending the school are prejudiced.

Measuring the School Environment
*School Connectedness***
Teachers treat students fairly; teen feels close to people at school, gets along with teachers and students.
*Student Prejudice***
Extent to which students at teen's school are prejudiced.
*Attendance**
The average daily attendance.
*Parent Teacher Organization**
Percent of parents involved with a parent teacher organization (as identified from paid dues).
*Dropout Rate**
Estimated dropout rate: high vs. low.
*School Types**
Comprehensive public, magnet, parochial, technical, other.
*Teacher Education**
Percent of teachers with masters degrees.
*College**
Proportion of students who are college bound.

* As reported by school administration. **As reported by adolescent.

These are selected measures used to understand the school environment.

Protecting Teens from Emotional Distress

Of all the measures of school environment examined, only two make a difference for adolescents' mental health:

- **feeling connected to school; and**
- **believing students at school to be prejudiced.**

Both older and younger students who feel connected to their school report lower levels of emotional distress; they are less likely to think about, or attempt, suicide. Students who perceive other students to be prejudiced report higher levels of emotional distress.

Influence of School on the Emotional Health of Teens

	Emotional Distress		Suicidal Thoughts and Attempts	
	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12
School				
School connectedness	■	■	■	■
Perceived student prejudice	■	■		

not statistically important ■ protective factor ■ risk factor

Diminishing Youth Violence

Students' positive feelings of connectedness to school are also moderately associated with lower levels of violent behavior. No other school characteristics appear to be associated with committing violent acts.

Influence of School on Youth Participation in Violence

	Violence	
	Grades 7-8	Grades 9-12
School		
School connectedness	■	■

not statistically important ■ protective factor ■ risk factor

Protecting Against Substance Abuse

A feeling of connectedness to school also protects youth from cigarette, alcohol, and marijuana use. For all

three, when youth report high levels of connectedness to their school, they also report less frequent use.

Delaying Sexual Debut and Reducing Pregnancy

Feeling a high level of connectedness to school also is associated with a delay in first sexual intercourse. Other factors associated with a modest delay in sexual debut include attending a parochial school and attending a school with high overall average daily attendance. None of the school factors are associated with students' chances of becoming pregnant.

Influence of School on Adolescent Subststance Abuse

	Cigarette Use		Alcohol Use		Marijuana Use	
	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12
School						
School connectedness						

not statistically important | protective factor | risk factor

School Characteristics that Protect Teens From Early Sexual Intercourse

	Age of Sexual Debut	Pregnancy History
	All Grades	Sexually Experienced Females ≥ 15 Years
School		
School connectedness		
Average daily attendance		
Parochial school*		

*This is a yes/no question

not statistically important | protective factor | risk factor

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School Connectedness Matters

The Add Health research team examined many aspects of the school environment, but found just one—a feeling of connectedness to school—to be consistently associated with better health and healthier behaviors among the students. Measures of classroom size, teacher training, and parent involvement with school appear unrelated to adolescents' health behaviors and emotional well-being. Schools' attendance records are associated with only one outcome, the onset of sexual intercourse. Likewise, school policies appear to have little or no relationship to the behavior of teenagers who attend the school.

What seems to matter most for adolescent health is that schools foster an atmosphere in which students feel fairly treated, close to others, and a part of the school. Our adolescent children, both younger and older, stand a better chance of being protected from health risks when they feel connected to their school.

Individual Characteristics Make a Difference

Adolescents' *attitudes, beliefs, and past experiences have important effects on their emotional health and* *on the choices they make about getting involved in risky behaviors.*

The Add Health research team examined individual factors believed to be generally important for health and well-being. They measured how adolescents view themselves: their self-esteem, whether they look older or younger than others their age, and whether they expect to survive to age 35.

They examined whether the young people participate in religious activities and view themselves as religious.

Adolescents' experience with romantic relationships was examined to measure whether adolescents had romantic feelings for or were involved in a romantic relationship with someone of the same sex.

Questions were asked about key indicators of the adolescent's achievement in school—grade point average and repeating a grade—as well as information about the adolescent's

current involvement in work for pay. The research team also examined characteristics that they believed would be important for understanding the adolescent's risk of specific behaviors or health outcomes; for example, having been a witness to violence, or having pledged to remain a virgin until marriage.

Getting at Individual Characteristics
Self-Esteem
Extent to which adolescent agrees to having good qualities, a lot to be proud of, likes self, feels loved and wanted.
Religious Identity
Whether adolescent affilitates with a religion and, if so, frequency of prayer and perception as religious.
Same Sex Attraction
Ever had same sex romantic attraction.
Perceived Risk of Untimely Death
Perceived chances of dying before age 35.
Work
Worked 20-plus hours per week for pay during the school year.
Physical Appearance
Appears older/younger than most age peers.
Repeated Grade
Ever repeated one or more grades.
Grade Point Average
Available grades in English, math, history/social studies and science in the most recent reporting period.

Individual characteristics are both protective factors and risk factors for adolescent health behavior.

Protecting Against Emotional Distress

Individual characteristics are important to young people's mental health. Teens who have high self-esteem are more likely to be protected from emotional distress. Having a good grade point average is also associated with less emotional distress.

However, some factors increase the risk of emotional distress regardless of grade level:

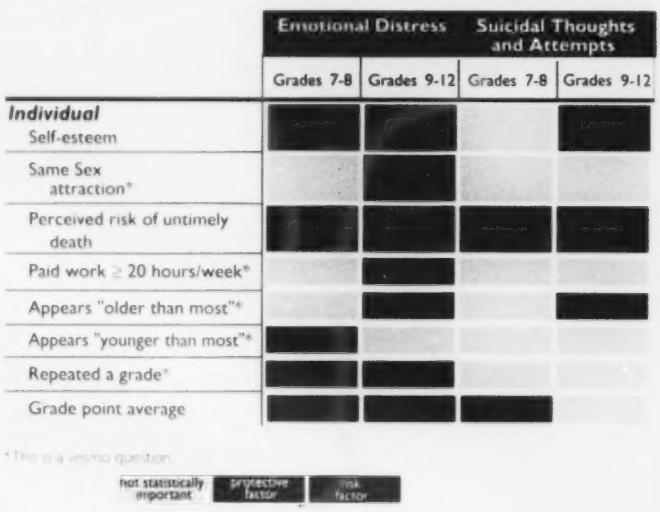
- **being held back one or more grades in school; and**
- **perceiving a risk of early death.**

Older adolescents (those in grades 9-12) who report feeling attracted to someone of the same sex have greater emotional distress than their peers who do not. Older adolescents who work at a paid job for 20 or more hours a week and those who say they look older than their peers are also at greater risk for emotional distress.

Younger teens (those in 7th and 8th grade) who report looking younger than most of their peers also experience more emotional distress. For all teens, being physically "out of sync" with peers seems to extract an emotional price.

Only a few individual characteristics play a role in whether teens report contemplating or attempting suicide. Those who think they will die young are at risk regardless of age. For younger teens, a low grade point average is significantly related to having thought about or attempted suicide. For older teens, both low self-esteem and looking older than peers are also significant risk factors.

Individual Characteristics That Influence the Emotional Health of Teens



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Individual Characteristics That Influence Teen Participation in Violence

	Violence	
	Grades 7-8	Grades 9-12
Individual		
Perceived risk of untimely death		
Grade point average		
History of victimization/ witnessing violence		
Weapon carrying		
Other deviant behavior		
Drug selling*		

*This is a yes/no question.

not statistically important | protective factor | risk factor

Diminishing Youth Violence

Those teens most likely to be involved in committing violent acts are those who:

- **have been a victim or a witness to violence;**
- **carry a weapon;**
- **are involved in deviant behavior;**
- **or sell drugs.**

When younger teens are doing poorly in school or expect to die young, they are also more likely to be involved in interpersonal violence. But, these factors are only moderately associated with participation in violence.

Reducing Substance Abuse

Individual characteristics also influence whether adolescents use cigarettes, alcohol, and marijuana. For both younger and older youth, personal importance placed on religion and prayer is associated with decreased frequency of cigarette smoking and drinking. This is also associated with less frequent marijuana use in older teens. High

Individual Characteristics that Influence Teen Substance Abuse

	Cigarette Use		Alcohol Use		Marijuana Use	
	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12	Grades 7-8	Grades 9-12
Individual						
Self-esteem						
Religious identity						
Same sex attraction*						
Perceived risk of untimely death						
Paid work ≥ 20 hours/week*						
Appears "older than most"*						
Repeated grade in school*						
Grade point average						

*This is a yes/no question

not statistically important | protective factor | risk factor

levels of self-esteem are also associated with a lower frequency of reported cigarette and marijuana use by older adolescents, and less alcohol use among all teens.

For younger and older teens alike, two individual characteristics are associated with more frequent substance use: appearing older than peers and low grade point average.

- **teens in grades 9 through 12 use cigarettes, alcohol and marijuana more frequently when they work 20 or more hours a week in a job for pay;**

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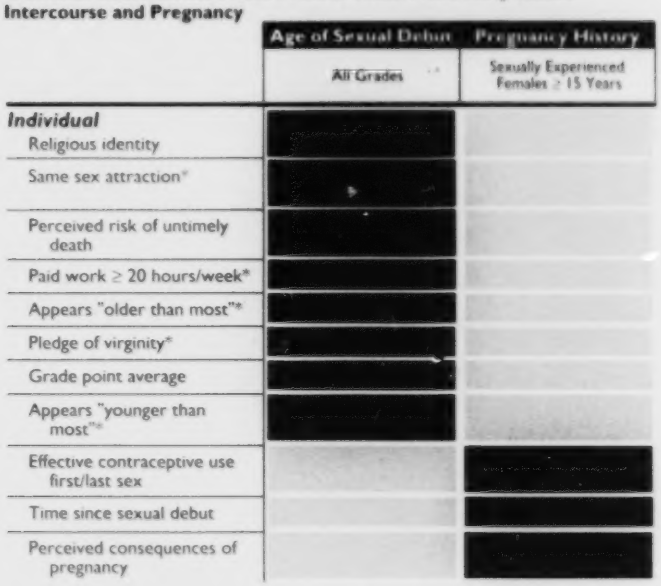
- **older teens report somewhat more frequent alcohol and marijuana use if they also report feeling attracted to someone of the same sex;**
- **teens in grades 7 and 8 are more likely to smoke cigarettes if they have repeated a grade in school; and**
- **young teens are more likely to use all substances if they anticipate an early death.**

Individual Characteristics that Protect Teens From Early Sexual Intercourse and Pregnancy



Delaying Sexual Involvement and Reducing Pregnancy

When adolescents report that they have taken a pledge to remain a virgin until marriage, they are more likely to delay intercourse. Other protective factors include:

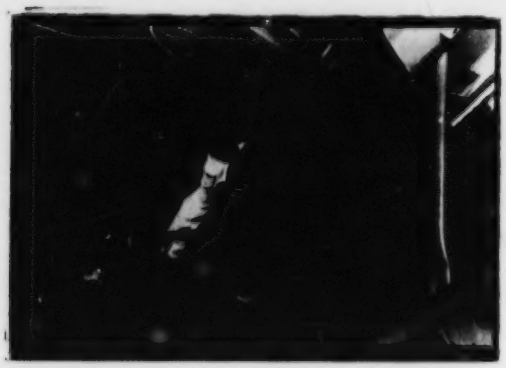
- **a higher level of importance placed on religion and prayer;**
- **appearing younger than age-mates; and**
- **a higher grade point average.**

Girls who have been pregnant are less likely to perceive negative consequences of becoming pregnant and are less likely to have used contraception at the first and/or most recent time of intercourse.

Conclusion: Connections Make a Difference in the Lives of Youth

The initial results from *Add Health show that families, schools,* *and individual factors do make a difference* *in the lives of youth.*

Across all of the health outcomes examined, the results point to the importance of family and the home environment for protecting adolescents from harm. What emerges most consistently as protective is the teenager's feeling of connectedness with parents and family. Feeling loved and cared for by parents matters in a big way.



When a parent is physically present in the home at key times, youth are less likely to use cigarettes, alcohol, and marijuana, and less likely to be emotionally distressed. When teenagers perceive that their parents have high expectations for their school success, they have lower levels of emotional distress and, if in high school, are less likely to smoke cigarettes and engage in violent behavior.

Homes Affect Health

Not only is parent behavior important in shaping health outcomes, so, too, is the home environment. If adolescents have easy access to cigarettes, alcohol, and marijuana at home, they are more likely to use these substances. If teens have easy access to guns in the home,

they are more likely to act violently towards others and older teens are at increased risk for suicidal thoughts or attempts. These findings support the Surgeon General's focus on restricting adolescents' access to tobacco, and the American Medical Association's recommendation to remove guns from the home. These are concrete actions that parents can take to protect their adolescent children.

The school environment also makes a difference in the lives of youth, but not in the conventional ways we often think of schools. School policies, classroom sizes, and teacher training appear unrelated to the emotional health and behaviors of students. Instead, what matters is the students' sense of connection to the school they attend: if students feel they are a part of the school, are treated fairly by teachers, and feel close to people at school, they have better emotional health and lower levels of involvement in risky behavior. Feeling that other students are not prejudiced is also protective for students in some cases. Future analyses of Add Health data can explore why some students feel connected to their schools while others do not, and how schools can better create a sense of connectedness among their students.

Personal Attitudes Matter

Finally, the adolescent's own attitudes, beliefs, and experiences have

an important influence. When self-esteem is high, emotional distress is low. When adolescents feel religion and prayer are important in their lives, they are less likely than others to smoke cigarettes, drink alcohol, or use marijuana, and more likely to delay sexual activity.

However, a host of individual characteristics is also associated with behaviors that can jeopardize young people's present and future health.

Balancing Work and School

While part-time jobs may increase a young person's sense of worth and

provide additional income, working too much may exact a high cost. In Add Health, 17.9 percent of older teens report working during the school year at least 20 hours per week. These adolescents who work half-time or more report higher levels of emotional distress, substance use, and earlier ages at first sexual intercourse. Others have cautioned against adolescents working long hours, focusing on the adverse consequences of fatigue and excessive leisure income. The present study echoes the warning.

Students who have low grades and those held back a grade have, in varying degrees, higher levels of emotional distress, increased substance use, more involvement in violence, and an earlier sexual debut. More than one in five adolescents had been held

back a grade or more in school. This finding suggests that school-related learning and behavior problems deserve a closer look. School failure has significant health-compromising consequences.

Teens who are "out of sync" with their peers are at risk. This first analysis of the Add Health data shows that not only do those who perceive themselves as looking older than their same-age peers have intercourse at a younger age, they are more likely to use cigarettes, alcohol, and marijuana. In high school, they are also more likely to experience emotional distress or to think about or attempt suicide than those who perceive themselves as looking age-appropriate. What about those who see themselves as looking younger than their peers? With the exception of younger teens who experience higher levels of emotional distress, in general, they do not share the same risks as their old-for-age peers.

The Add Health results show that most adolescents are doing well. However, a significant minority are involved in behaviors that can put their health at risk, and some are emotionally distressed.

Parents Still Central

Adolescents' connections to family and school make a difference to their health and well-being. The Add Health findings show that parents and family are still central in the lives of both younger and older teenagers. However, workplace pressures are putting the squeeze on families. Since the 1960s, American young people, on average, have lost 10 to 12 hours per week of parental time. Despite this, parents are making a difference in the lives of their adolescent children: by being home at key points of the day, by conveying high expectations for school success and behavior, by restricting access to guns, alcohol, cigarettes, and drugs, and, more than anything else, by instilling in their children a sense of belonging.

Epilogue

This *is just the first* *analysis. Many questions remain and Add Health data can help answer them.*

In the years to come, scientists from many disciplines will use the Add Health data to answer questions like the following.

- **Do older siblings influence the health behaviors of their younger brothers and sisters?**
- **How do school peer networks contribute to spreading or controlling the use of cigarettes and drugs among adolescents?**
- **What is the role of romantic relationships in the emotional health of adolescents? Do they contribute to emotional health or create problems?**
- **Can parents contribute to the health and safety of their children by sending them to a better school, or moving to a safer neighborhood?**
- **How does the availability of alcohol in a community affect adolescent alcohol use? Can communities reduce the alcohol use of adolescents by making it harder for adolescents to get it in their communities?**

- **What can single mothers do to reduce the high risk their children face in negotiating the hazards of adolescence?**
- **What are the risks and what are the benefits that adolescents derive from attending schools with multiple racial and ethnic groups, as compared to more culturally and racially homogeneous schools?**
- **Is early sexual behavior a risk to adolescent emotional health? Or are the risks of sex primarily pregnancy and STDs?**
- **Do some schools have more violent behavior because more violent adolescents go there, or do adolescents become more violent when they attend schools with higher levels of violence?**
- **Why do girls do better in school, and have more healthy behavior all around than boys, but have lower emotional health and lower self-esteem than boys?**
- **How do immigrant children, or American-born children of immigrants, make their way through adolescence in the American environment?**
- **How important is religion in keeping adolescents on a track toward well-being?**

Appendices

Research Design*

Add Health was designed to assess the health status of adolescents and explore the causes of their health-related behaviors, focusing on the effects of the multiple contexts or environments (both social and physical) in which they live. The study has collected data of interest to investigators from many disciplines in the social and behavioral sciences and from many theoretical traditions.

In-School Sample

The primary sampling frame for Add Health was a database collected by Quality Education Data, Inc., (QED). A sample of 80 eligible high schools was selected. A high school was defined as such if it included an 11th grade and had an enrollment of more than 30 students. The sample was stratified by region, urbanicity (urban/suburban/rural), school type (public/private/parochial), ethnic mix, and size; schools were selected with probability proportional to size. More than 70 percent of the originally sampled high schools were recruited. If a high school refused to participate, a replacement school within the stratum was selected. Participation in Add Health meant that the school provided a roster of its students for project use and, in most cases, agreed to administer the in-school questionnaire during one class period with the assistance of its teachers.

Once a high school was recruited, its feeder schools—that is, those schools that include 7th grade and send their graduates to that high school—were identified. From among all possible feeder schools, one was selected with probability proportional to the number of students it contributed to the high school for participation, replacing as necessary. The recruitment effort resulted in a pair of schools in each of 80 communities although, since some high schools spanned grades 7 to 12, they functioned as their own feeder school and the pair was in fact a single school. There are 134 discrete schools in the core study.

In-School Questionnaire

The in-school questionnaire, a self-administered instrument formatted for optical scanning, was administered to students in grades 7 to 12 from September 1994 through April 1995. In each school, one 45- to 60-minute class period was devoted to completing the questionnaires. There was no "make-up" day for students not present on the day of administration. Parents were informed in advance when the questionnaire administration would occur and could direct that their children not participate.

The questionnaire included topics such as the social and demographic characteristics of respondents (of interest both in itself and as a selection criterion for the Add Health in-home special samples), the education and occupation of parents, household structure, risk behaviors, expectations for the future, self-esteem, health status, friendships, and school-year extracurricular activities.

Each participating school provided the study with a roster of its students. Identification numbers were assigned to the names on the roster; copies of the roster were made and provided to students for use during the completion of the in-school questionnaire. Rosters were collected at the end of the class period and destroyed.

The in-school questionnaire was completed by more than 90,000 adolescents.

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*Based on Bearman, Peter S., Jones, Jo, and Udry, J. Richard. (1997) The National Study of Adolescent Health: Research Design [www document]. URL: http: www.cpc.unc.edu/projects/addhealth/design.html.

In-Home Samples–Wave I

CORE SAMPLE–

All students listed on a school roster, plus those who completed an in-school questionnaire, were eligible for selection into the core in-home sample. This is a nationally representative sample of adolescents in grades 7 to 12 in the US. Students in each school were stratified by grade and sex and about 17 students were randomly chosen from each stratum so that a total of approximately 200 adolescents were selected from each of the 80 pairs of schools. A total core sample of 12,105 adolescents were interviewed.

SPECIAL OVER-SAMPLES–

Ethnic: Based on the self-reported data from the in-school questionnaire, four supplementary ethnic-group samples were drawn. Number of completed cases in these samples are:

- 1,038 blacks from well-educated families (with a parent with a college degree)
- 334 Chinese adolescents
- 450 Cuban adolescents
- 437 Puerto Rican adolescents

In addition, the main sample contains more than 1,500 Mexican-Americans and significant numbers of Nicaraguans, Japanese, South Koreans, Filipinos, and Vietnamese.

Saturation: Because of Add Health's interest in social networks, there were 16 schools from which all enrolled students were selected for the in-home interviews. These were two large schools (with a total combined enrollment of over 3,300) and 14 small schools (each with enrollments fewer than 300). One of the large schools is predominantly white and is located in a mid-sized town. The other is ethnically heterogeneous and is located in a major metropolitan area. The 14 small schools have various characteristics. They are located in rural and urban areas. Some are public schools and some are private.

Disabled: A sample of 589 students who reported on the in-school questionnaire that they had a physical disability involving the use of their limbs was selected. Adolescents were considered to be limb disabled if they indicated on the in-school questionnaire (1) that they had difficulty using their hands, arms, legs, or feet because of a physical condition and (2) that they had used a mechanical device (e.g., wheelchair, cane, brace, or artificial limb) for the past 12 months or more. However, when the sampled adolescents were interviewed at home, many of these adolescents did not have a limb disability. Therefore, it is problematic whether those adolescents initially identified as limb disabled were actually disabled.

Genetic: The genetic sample consists of pairs of siblings who resided in the same household. Identical twins, fraternal twins, half-siblings, and step-siblings were sampled with certainty. In addition, an attempt was made to enroll a number of non-related pairs. The majority of full-sibling pairs entered into the sample by chance (disproportionately drawn from the 14 saturation-school samples). The genetic sample will make possible analyses that differentiate between parental social influence and parental genetic influence, and also that assess the extent to which environmental influences on behavior are shared among siblings.

In-Home Interview–Wave I

In-home interviews were conducted between April and December 1995. Interviews took from one to two hours to complete depending on the respondent's age and experiences. The majority of interviews were conducted in the respondents' homes.

In the interests of confidentiality, no paper questionnaires were used. Instead, all responses were recorded on lap-top computers. For less sensitive sections, the interviewer read the questions and entered the respondent's answers. For more

sensitive sections, the respondent listened to pre-recorded questions through earphones and entered the answers directly into the lap-top. In addition to maintaining data security, this minimized the potential for interviewer or parental influence.

Some of the topics covered by the in-home interview are: health status, health facility utilization, nutrition, peer networks, decision-making processes, family composition and dynamics, educational aspirations and expectations, employment experience, the ordering of events in the formation of romantic partnerships, sexual partnerships, substance use, and criminal activities. Care was taken to screen respondents on age and experience so that only appropriate questions were asked. Additional questions concerning the joint occurrence of risk behaviors were asked of respondents who had indicated they had done the behaviors separately, for example, fighting while using drugs or drinking while carrying a weapon.

Adolescents were given the Add Health Picture Vocabulary Test (AHPVT) which is a computerized, abridged version of the Peabody Picture Vocabulary Test-Revised at the beginning of the in-home interview. This test of hearing vocabulary involves the interviewer reading a word then the respondent selecting the illustration which best fits the word. Each word has four simple, black-and-white illustrations arranged in a multiple-choice format from which the respondent indicates his or her choice. For example, the word "furry" has illustrations of a parrot, a dolphin, a frog, and a cat from which to choose. There were 78 items on the AHPVT, and raw scores have been standardized by age.

In-Home Sample–Wave II

The sample for the Wave II in-home interview was composed of the respondents to the Wave I in-home interview, with the following exceptions:

1. A respondent who was in the 12th grade at Wave I and who was not part of the genetic sample was not reinterviewed at Wave II
2. Respondents who were in only the Wave I disabled sample were not reinterviewed.
3. An additional 65 adolescents who were members of the genetic sample and who had not been interviewed in Wave I were interviewed in Wave II.

In-Home Interview–Wave II

Wave II in-home interviews took place from April through August 1996. The interview was generally similar to that at Wave I. Questions relating to sun exposure and more detailed nutrition questions were added. Questions about attributes such as ethnic background, which should not vary over time, were not repeated. Physical and functional limitations questions were omitted because the disabled sample was not reinterviewed. As well as being asked their height and weight during the course of the interview, respondents were actually weighed and measured by the interviewer.

School Administrator Questionnaires —Wave I and Wave II

In the first year of the study, administrators from the participating schools completed self-administered questionnaires dealing with school policies and procedures, teacher characteristics, health service provision or referral, and student body characteristics. In the spring of 1996, these schools were contacted by telephone and, in addition to updating the information from the first year, administrators were asked about specific dress codes and security procedures on the school campus.

Parent Questionnaire

A parent, usually the resident mother, of each adolescent respondent interviewed in Wave was asked to complete an interviewer-assisted, op-scanned questionnaire covering topics such as inheritable health conditions; marriages and marriage-like relationships; neighborhood characteristics; involvement in volunteer, civic, or school activities; health-affecting behaviors; education and employment; household income and economic assistance; parent-adolescent communication and interaction; and, the parent's familiarity with the adolescent's friends and friends' parents.

Neighborhood/Community Context

Information about the neighborhoods/communities in which adolescent respondents live has been gathered from a variety of sources, such as the US Census, the Centers for Disease Control and Prevention, the National Center for Health Statistics, the Federal Bureau of Investigation, the National Council of Churches, and many other published data bases. Community variables include:

- demographic and household characteristics
- labor force participation and unemployment
- income and poverty
- social integration/disintegration
- availability and utilization of health services
- social programs and policies
- crime

Data Access

Data from the Add Health study are being made available to researchers all over the world. In this way, scientists from different disciplines and those interested in different aspects of health can use the data to contribute to knowledge about the determinants of adolescent health. Add Health data is available in two forms — public-use data sets and restricted-access contractual data sets. To protect the confidentiality of respondents, public-use data includes only a random sub-set of respondents.

The first release of public-use data, which includes Wave I in-school questionnaire data, in-home parent and adolescent interview data, and the Add Health Peabody Picture Vocabulary Test, is available now. A second release of public use data, scheduled for the winter of 1998, will also include the Wave II in-home adolescent interview, the community contextual data, and the school friendship network data.

Public-use data sets are available from:
Sociometrics Corporation
170 State St., Ste. 260
Los Altos, CA 94022-2812
650-949-3282 (telephone), 650-949-3299 (fax)
Socio@socio.com (e-mail)

For further information about the contractual data sets, contact:
Jo Jones
Carolina Population Center
123 West Franklin Street
University Square East
Chapel Hill, NC 27516-3997

More information is available on The National Longitudinal Study of Adolescent Health:
http://www.cpc.unc.edu/addhealth.

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